

1970

OPERATING SUMMARY

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SOUTHAMPTON

water treatment plant

ONTARIO WATER RESOURCES COMMISSION

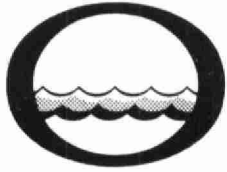
Division of Plant Operations

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Water management in Ontario

Ontario
Water Resources
Commission

135 St. Clair Ave. W.
Toronto 195
Ontario

Once again we have the privilege of submitting to you our latest detailed report on financial progress and technical activity at your water treatment plant.

The statistical information contained in this annual operating summary will undoubtedly be a useful barometer of efficiency. Of particular interest will be the comments and recommendations of the regional operations engineer, who was intimately connected with day-to-day operation throughout 1970.

Together with the extensive cost data provided, this information should assist greatly in your general understanding of the problems met and dealt with, and in furnishing a yardstick for possible future expansion.

D.S. Caverly,
General Manager.

D.A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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SOUTHAMPTON
water treatment plant

operated for

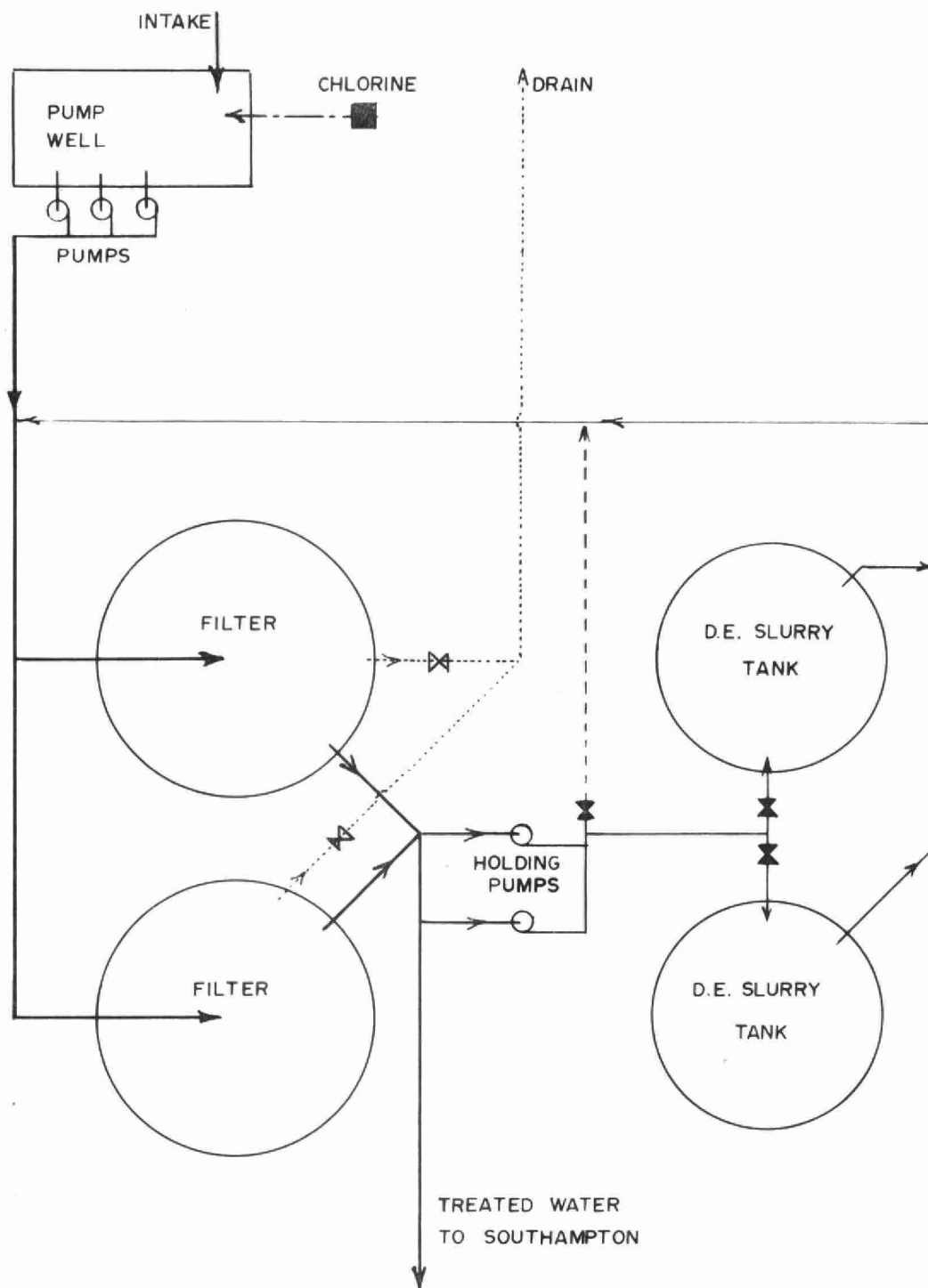
THE TOWN OF SOUTHAMPTON

by the

ONTARIO WATER RESOURCES COMMISSION

1970 ANNUAL OPERATING SUMMARY

SOUTHAMPTON WATER TREATMENT PLANT



DESIGN DATA

NOMINAL CAPACITY

1.00 mgd

RAW WATER SOURCE

Lake Huron

INTAKE

Depth at crib: 15 ft

Pipe Size: 1100 ft of 24 in dia

CAPACITIES OF UNITS

Pumps: #1 700 igpm or 1.00 mgd

#2 700 igpm or 1.00 mgd

Standby 2100 igpm or 3.0 mgd

Filters: 2 x 350 = 700 igpm or 1.00 mgd

FILTRATION

Type: Bowser, pressure diatomaceous earth filter

Size: Two filters rated at 350 gpm each
(1.75 gpm/ft²)

Surface: 400 ft² (total)

CHLORINATION

One Fischer & Porter gas chlorinator,
50 lb/day

STORAGE

Elevated Tank 100,000 gal (owned by
Town); useable volume 30,000 gal

'70 REVIEW

FLOWS	DAILY FLOW mil gal	OCCURRING IN THE MONTH OF	MONTHLY FLOW mil gal	OCCURRING IN THE MONTH OF
Average	.33	—	9.95	—
High	.58	June	17.37	July
Low	.23	October	7.14	April

GENERAL

The plant continued to suffer operating problems during 1970 and alterations to remedy the situation were continued. The consulting firm of Metier Limited, prepared a detailed report reviewing the control, instrument, mechanical and hydraulic design of the existing facilities. They made recommendations to simplify and further improve the operation. Some of these recommendations will be implemented during 1971.

PLANT FLOWS and CHLORINATION

The flowmeter was inoperative during the peak summer demand period and flows have been estimated based on service pump hours of operation.

The total flow for the year was estimated to be 122.74 million gallons, approximately 20% greater than the previous year. The average daily flow was 0.34 million gallons.

A total of 1410 lbs. of chlorine was used in 1970. Application at an average dosage of 1.2 milligrams produced a residual of 0.5 mg/l.

PROCESS CHEMICALS

A total of 57,500 lbs. of diatomaceous earth was used during the year at an average rate of 73 milligrams per litre.

WATER QUALITY

The plant continued to produce a high quality potable water. During July one set of samples indicated doubtful quality, but a follow-up set showed that the water quality was satisfactory.

CONCLUSIONS

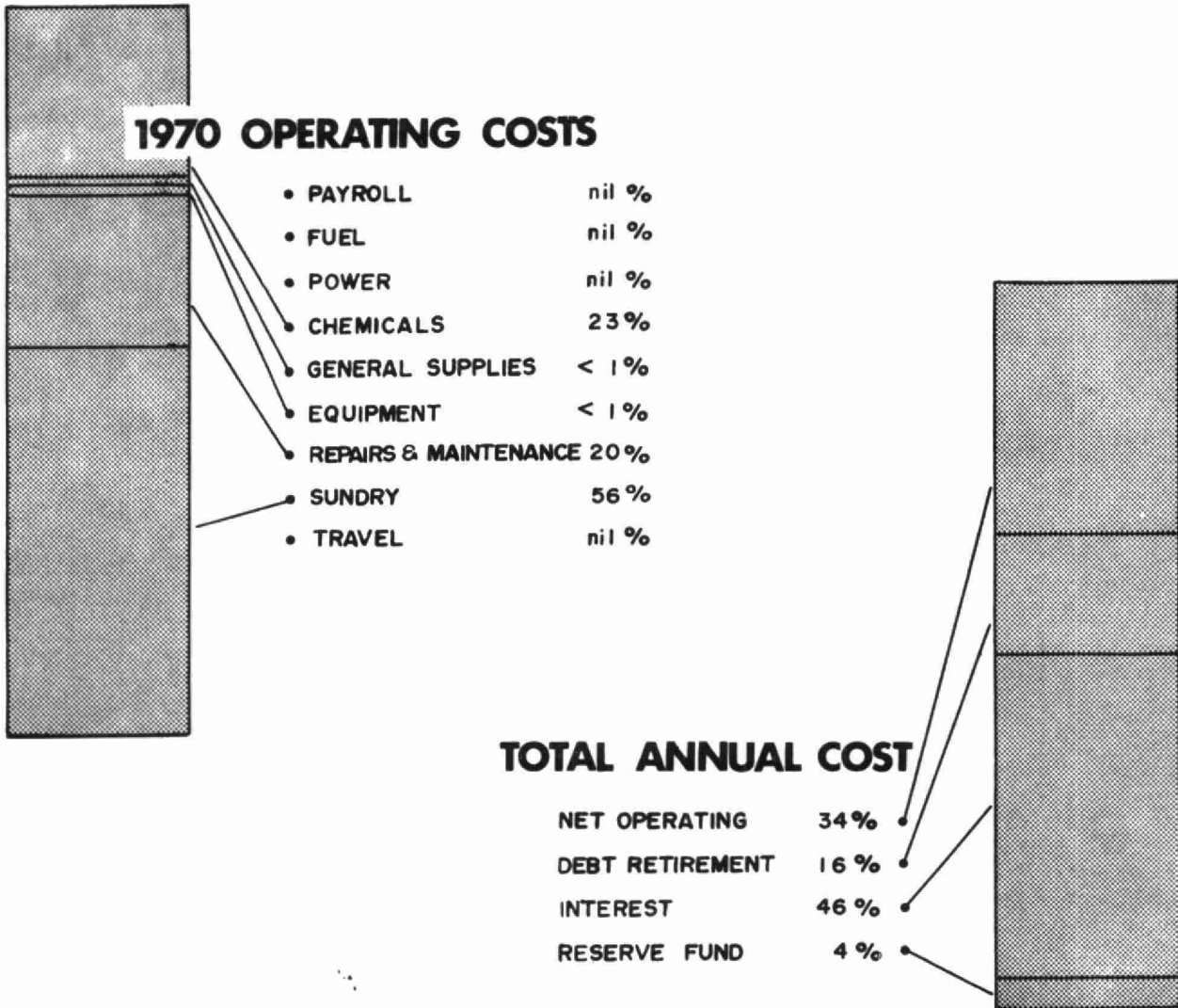
The total flow increased 20% from 1969, however, as a result of repairs and alterations over the past 2 years, further reductions were achieved in the quantity of diatomaceous earth used.

PROJECT COSTS

NET CAPITAL COST (Final)	\$426, 300. 68
DEDUCT - Portion financed by CMHC/MDLB (Final)	<u>-</u>
Long Term Debt to OWRC	<u>\$426, 300. 68</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1970	\$ <u>49, 699. 56</u>
Net Operating	\$ 17, 907. 16
Debt Retirement	8, 603. 00
Reserve	2, 015. 13
Interest Charged	<u>23, 884. 02</u>
TOTAL	\$ <u>52, 409. 31</u>

RESERVE ACCOUNT

Balance @ January 1, 1970	\$ 9, 697. 58
Deposited by Municipality	2, 015. 13
Interest Earned	<u>665. 93</u>
	\$ 12, 378. 64
Less Expenditures	<u>2, 000. 00</u>
Balance @ December 31, 1970	\$ <u>10, 378. 64</u>



Yearly Operating Costs

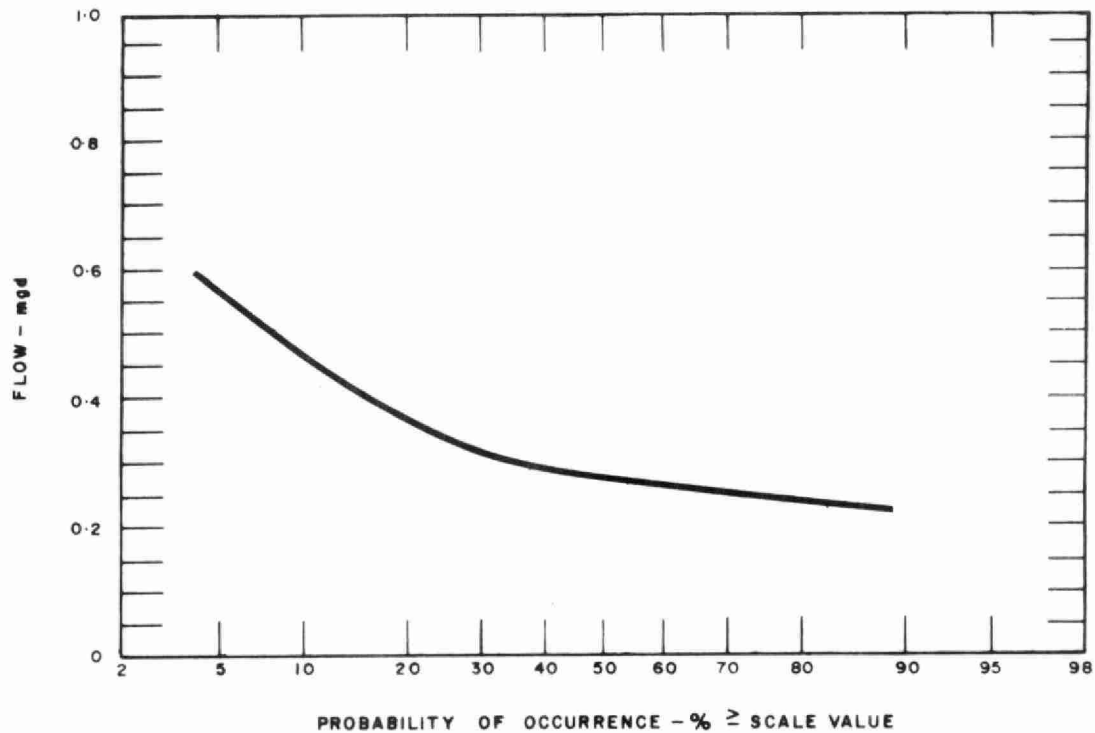
YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER THOUSAND GALLONS
1967	109.494	\$17,684.60	16 cents
1968	100.89	16,778.68	17 cents
1969	101.72	15,805.05	16 cents
1970	122.74	17,907.16	15 cents

MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY
JAN	3.50		-	-	3.50	
FEB	63.65		29.95	33.70	-	
MAR	178.53		68.08	60.63	49.82	
APR	2694.52		-	7.00	26.83	2660.69
MAY	589.65		12.37	21.20	556.08	
JUNE	940.78		-	-	911.83	28.95
JULY	469.43		-	-	469.43	
AUG	4036.45		-	-	129.23	3907.22
SEPT	503.20		34.65	-	193.84	274.71
OCT	182.89		-	-	182.89	
NOV	4668.37	3859.28	-	-	809.09	
DEC	3576.19	174.83	-	-	207.08	3194.28
TOTAL	17907.16	4034.11	145.05	122.53	3539.62	10065.85

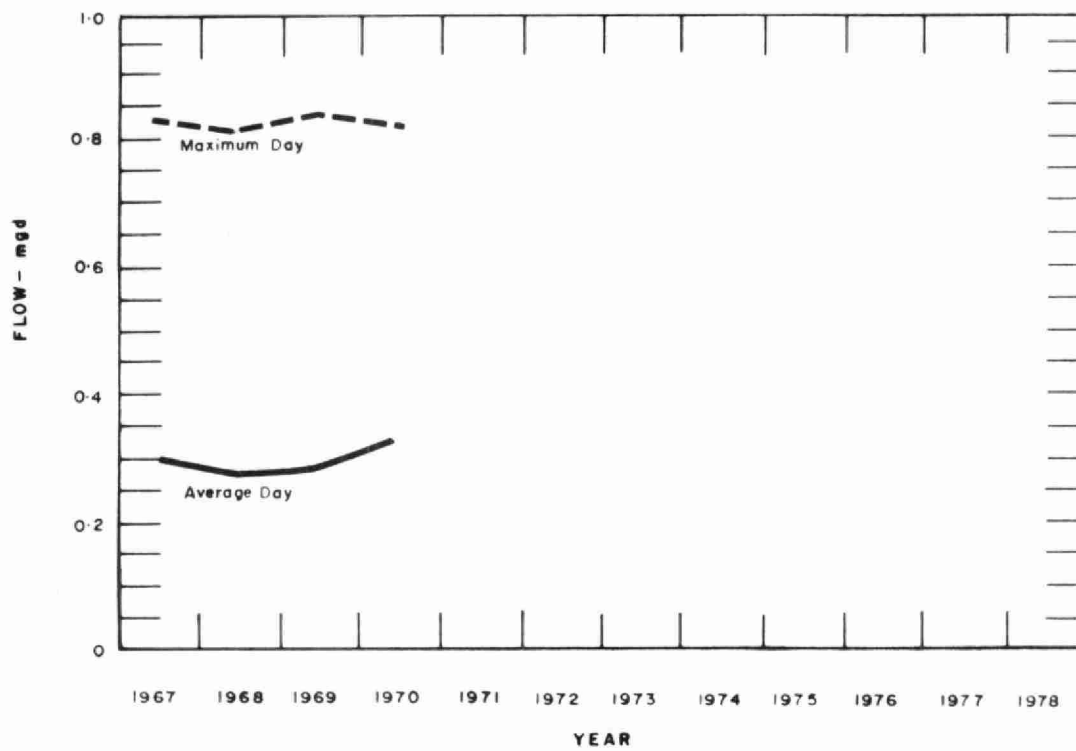
BRACKETS INDICATE CREDIT

PROCESS DATA



FLAWS

NOMINAL CAPACITY 1.0 MGD



PLANT FLOWS

MONTH	TOTAL PLANT OUTPUT mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM RATE mgd	MAXIMUM DAILY FLOW mil gal	MAXIMUM 3-DAYS' FLOW mgd
JANUARY	8.54	.28	-	.33	.32
FEBRUARY	8.35	.30	-	.56	.39
MARCH	8.15	.26	-	.39	.32
APRIL	7.14	.24	-	.31	.29
MAY	10.26	.33	-	.53	.44
JUNE	17.31 *	.58	-	.84	.78
JULY	14.70	.49	-		
AUGUST	16.60	.54	-		
SEPTEMBER	8.50	.28	-	.50	.26
OCTOBER	7.23	.23	-	.31	.30
NOVEMBER	8.05	.27	-	.53	.35
DECEMBER	7.91	.26	-	.50	.34
TOTAL	122.74				
AVERAGE		.34	(MAXIMUM VALUES FOR THE YEAR)		
			-	.84	.78

* Flow recorder inoperative June 26-September 24
 Estimate based on service pump hours at 630 gpm

FILTER OPERATION

MONTH	TURBIDITY in JTU				AVERAGE	DIATOMACEOUS EARTH	
	RAW WATER		PLANT EFFLUENT		FILTER RUN hours	USED 10 ³ lb	DOSAGE mg / l
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM			
JANUARY	2.2	3.5	-	-	300	1.7	20
FEBRUARY	1.6	2.0	1.6	2.0	-	0	0
MARCH	1.1	10.0	1.1	10.0	-	0	0
APRIL	12.1	50.0	-	-	46	15.1	210
MAY	3.6	20.0	-	-	39	5.6	55
JUNE	2.1	20.0	-	-	200	1.2	8
JULY	2.0	4.8	3.7	6.0	135	2.5	-
AUGUST	3.9	30.0	-	-	87	8.5	-
SEPTEMBER	2.3	8.0	-	-	130	6.0	-
OCTOBER	2.8	6.5	-	-	185	2.4	32
NOVEMBER	3.6	7.0	-	-	140	2.4	30
DECEMBER	10.8	60.0	-	-	33	12.1	153
TOTAL	-	-	-	-	-	57.5	-
AVERAGE	4.0	MAX 6.0	2.1	MAX 1.0	-	-	73

CHLORINATION and DISINFECTION

MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES WITH COLIFORMS PER 100 ml OF:					No. of Samples Taken	No. with Coliform Organisms	No. of Samples Taken	No. with Coliform Organisms	CHLORINE USED lb	DOSAGE		RESIDUAL in Plt. Eff. mg/l
	0	1 - 4	4 - 32	32-320	> 320						pre-mg/l	post mg/l	
JAN	2	0	0	0	0	0	0	6	0	78	.9	-	.5
FEB	2	1	0	0	0	0	0	9	0	44	.5	-	.5
MAR	2	0	0	0	0	0	0	6	0	52	.6	-	.5
APR	2	0	0	0	0	0	0	6	0	87	1.2	-	.5
MAY	1	0	0	0	0	0	0	3	0	103	1.0	-	.5
JUNE	1	0	0	0	0	0	0	3	0	162	.9	-	.5
JULY	2	0	0	0	1	0	0	9	3	123	-	-	.5
AUG	1	0	1	0	0	1	0	4	1	248	-	-	.5
SEPT	1	1	0	0	0	0	0	6	0	167	2.2	-	.5
OCT	2	0	0	0	0	0	0	6	0	108	1.5	-	.5
NOV	1	0	0	0	0	0	0	3	0	110	1.4	-	.5
DEC	1	0	0	0	0	0	0	3	0	125	1.6	-	.5
TOTAL						1	0	64	4	1410			
AVERAGE	(NOTE: Geometric Mean) 1.5 COLIFORMS/100 ML									118	1.2	-	.5

CHEMICAL CHARACTERISTICS

PROPERTY	RAW WATER				PLANT EFFLUENT				DESIRABLE STANDARDS
	Number of Samples	Average	Maximum	Minimum	Number of Samples	Average	Maximum	Minimum	
HARDNESS mg/l as CaCO_3	1	98	98	98	2	94	94	94	80 - 100
ALKALINITY mg/l as CaCO_3	1	87	87	87	2	189	292	87	30 - 100
IRON mg/l Fe	1	.10	.10	.10	2	.10	.15	.05	< 0.3
CHLORIDE mg/l Cl^-	1	9	9	9	1	7	7	7	< 250
pH Units	1	8.7	8.7	8.7	2	8.2	8.8	7.6	



Date Due

[illegible]



Water management in Ontario